

## **REMARKS**

Entry of the foregoing amendments is respectfully requested.

### **Summary of Amendments**

Upon entry of the foregoing amendments, claims 2-21 are cancelled and claims 22-43 are added, whereby claims 22-43 will be pending, with claims 22 and 43 being independent claims.

Support for the new claims can be found throughout the present specification (see, e.g., the Examples) and in the cancelled claims.

Applicants emphasize that the cancellation of claims 2-21 is without prejudice or disclaimer, and Applicants expressly reserve the right to prosecute these claims in one or more continuation and/or divisional applications.

### **Summary of Office Action**

Claims 2, 3 and 6-20 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Rosenberg et al., U.S. Patent No. 6,046,297 (hereafter "ROSENBERG"), in view of Sondhe et al., U.S. Patent No. 5,340,652 (hereafter "SONDHE").

Claims 4, 5 and 21 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over ROSENBERG in view of SONDHE and in view of Motsinger et al., U.S. Patent No. 3,217,536 (hereafter "MOTSINGER").

**Response to Office Action**

Reconsideration and withdrawal of the rejections of record are respectfully requested, in view of the foregoing amendments and the following remarks.

***Response to Rejection of Claims 2, 3 and 6-20 under 35 U.S.C. § 103(a)***

The rejection essentially alleges that ROSENBERG teaches the reaction of the components of polyol component (A) recited in cancelled independent claim 19 with polyurethane component (B) and SONDHE allegedly renders it obvious to add the resultant product to an epoxy resin which is not yet completely cured.

Applicant respectfully disagrees with the Examiner in this regard. At any rate, the rejected claims are cancelled, wherefore the rejection is moot.

Regarding the claims submitted herewith it is pointed out that independent claim 22 makes it absolutely clear that in the claimed process one or more aromatic polyisocyanates are reacted with a mixture of (i) one or more polyols and (ii) one or more aromatic amines, i.e., that the one or more aromatic polyisocyanates are reacted concurrently with one or more polyols and with one or more aromatic amines.

ROSENBERG neither teaches nor suggests that an (aromatic) amine is or should be present during the reaction of one or more polyols with a molar excess of polyisocyanates to produce the isocyanate-terminated prepolymer disclosed therein. On the contrary, ROSENBERG clearly teaches that an (aromatic) amine is to be reacted with isocyanate-terminated prepolymer only, i.e., does not come into contact with the initially employed polyisocyanate(s) (and the initially employed polyol(s)). See, e.g., claims 1-3 of ROSENBERG.

In other words, ROSENBERG clearly teaches that an amine is added to isocyanate group containing compounds (isocyanate-terminated prepolymers) only after all of the employed polyol(s) has been reacted with excess polyisocyanate(s) (forming isocyanate-terminated prepolymers). Accordingly, ROSENBERG fails to teach or suggest a simultaneous reaction of a polyisocyanate with both a polyol and an amine.

The Examiner's attention further is directed to the following passages of ROSENBERG (emphasis added):

Col. 3, lines 12-21:

Further examples of this invention show an unexpected advantage using a blend of two aromatic diamine curatives, particularly MCDEA and 4,4'-methylene-bis-(2-chloroaniline) ("MBOCA"). When such a curative blend is reacted with TDI prepolymer, it reduces the propensity of the polymerizing mass to crack. Both polyol and MBOCA are known to react more slowly than MCDEA with isocyanate prepolymers. However, MCDEA/polyol blends (which are known in the art) do not impart reduced propensity to crack. Therefore, it is surprising that MCDEA/MBOCA blends do exhibit this improvement.

Col. 11, lines 3-10:

Comparative Examples C and H show the unsuitable effects of preblending MCDEA and polyol (PTMEG 1000). Such curative blends are known. In H, an 80/20 blend by weight of MCDEA and PTMEG 1000 was used in place of pure MCDEA, holding curative level constant at 0.95. The prepolymer type was held constant. Pot life was slightly reduced and propensity to crack was significantly increased by use of this curative blend.

Accordingly, ROSENBERG not only fails to teach or suggest the employment of a mixture of polyol and amine but even teaches that blends of polyol and amine (MCDEA) do not reduce, and may even significantly increase, the propensity to crack of the resultant cured polyurethane. In other words, ROSENBERG not only fails to render obvious the process recited in instant claim 22 but even teaches away therefrom.

SONDHE is unable to cure the above-noted deficiencies of ROSENBERG, even if one were to assume, *arguendo*, that one of ordinary skill in the art would be motivated to combine the teachings of ROSENBERG and SONDHE. For example, SONDHE does not even disclose the use of amines as reactants for polyisocyanate compounds. In this regard, it is pointed out that the amine hardeners mentioned in SONDHE are exclusively mentioned as hardeners for the epoxy composition (see col. 4, line 34 to col. 9, line 19 of SONDHE), whereas the passage of SONDHE which relates to the urethane composition (col. 9, line 21 to col. 12, line 58) does not mention amine hardeners. See also the abstract of SONDHE which states, *inter alia* (emphasis added):

The epoxy composition is generally a two-part, 100 percent volatile-free system containing one or more hardeners which are reacted with an epoxy component such as the glycidyl ether of bisphenol-A. The urethane composition is also generally a two-part, 100 percent volatile-free system containing a polyisocyanate component and an intermediate component comprising a polylactone polyol, and/or a polyether polyol, a polyester polyol, or a polyether-ester polyol, an aliphatic polyol chain extender and a moisture scavenger.

At any rate, according to page 5, second paragraph of the instant Office Action SONDHE "is relied on for the epoxy resin layer, not the teaching for the aromatic amine".

With respect to the combination of the teachings of ROSENBERG and SONDHE and the Examiner's comments in the paragraph bridging pages 6 and 7 of the instant Office Action, Applicant notes that the Examiner takes the position that "[s]imply because, the polyurethane prepolymer is solid at room temperature does not deter a person of ordinary skill in the art to melt the prepolymer and then react with the amine curing agent to produce the final polyurethane product based on the claim language."

In this regard, it is pointed out that even if one were to assume, *arguendo*, that one of ordinary skill in the art would heat the polyurethane prepolymer to melt same and thereafter add amine hardener, it can reasonably be expected that the hardening process at the elevated temperatures required for melting the prepolymer would significantly increase the rate of the hardening reaction. While this may be acceptable in a situation where the hardened polyurethane as such (in a mold) is the desired product (like in the case of ROSENBERG), it would evidently cause considerable problems (if feasible at all) if the polyurethane product were to be laminated with an epoxy resin that is not yet completely cured (as in the case of SONDHE).

For example, at col. 13, lines 29-47 SONDHE states (emphasis added):

The two-part solvent free, generally liquid, urethane system which can be stored in separate containers is mixed in any convention manner, and generally applied under pressure to the top of the previously applied epoxy composition. Upon mixing, the two-part urethane system will immediately commence reaction and hence it is immediately applied to the base layer before any substantial crosslinking or curing reaction occurs. Application can be in any conventional manner as by brushing, spraying, and the like. The thickness of the urethane layer will depend upon the surface being treated and the degree of protection sought and with regard to road lane marker, the urethane is generally applied at a thickness of from about 0.5 to about 10 mils, desirably from about 0.75 to about 5 mils, and preferably 2 or 3 mils.

The urethane composition must be applied while the epoxy base layer is still tacky and may be cured while the epoxy system is still curing.

The above procedure is apparently carried out at ambient temperature. It is not seen that it would be possible to carry out this procedure with a previously prepared and heated polyurethane prepolymer according to ROSENBERG to which an amine hardener has been added. For this reason alone, there is no motivation for one of ordinary skill in the art to consider the process of ROSENBERG for use in the production of the laminate of SONDHE.

Applicant submits that for at least all of the foregoing reasons and the additional reasons set forth in the responses to the previous Office Actions, ROSENBERG in view of SONDHE fails to render obvious the subject matter of any of the claims submitted herewith. In this regard, it is emphasized that in view of the clear facts set forth above, Applicant refrains from commenting on the various remaining allegations which are set forth in the instant Office Action without admitting however, that any of these allegations is meritorious.

***Response to Rejection of Claims 4, 5 and 21 under 35 U.S.C. § 103(a)***

Claims 4, 5 and 21 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over ROSENBERG in view of SONDHE and in view of MOTSINGER.

Applicant respectfully disagrees with the Examiner in this regard as well. At any rate, the rejected claims are cancelled, wherefore the rejection is moot.

It further is noted that claims 4, 5 and 21 are dependent claims and are not rendered obvious for at least all of the reasons which are set forth above in connection with the claims from which they depend. MOTSINGER apparently is unable to cure the deficiencies of ROSENBERG and SONDHE.

Moreover, it is not seen that one of ordinary skill in the art would be motivated combine the disclosure of MOTSINGER with the disclosure of ROSENBERG and/or SONDHE. For example, MOTSINGER mentions (foamed) polyurethanes and polyester or epoxy resins only generically as examples of suitable materials for the outer surface of the inner shell and the outer shell of the force vector transducer taught therein, without giving any details regarding the composition or production of these materials.

It further is not seen that someone who wishes to modify the teaching of ROSENBERG (relating to castable polyurethane and/or polyurethane/urea elastomer compositions; see, e.g., col. 1, lines 11-13 of ROSENBERG) or the teaching of SONDHE (relating to epoxy resin/polyurethane laminates for use as road lane markers; see, e.g., abstract of SONDHE) would expect to find any useful information in this regard in a document which relates to force vector transducers which are especially adapted for measuring both the direction and the extent of the three force components of a moving current of fluid such as air or water (see, e.g., col. 1, lines 9-13 of MOTSINGER).

Applicant submits that for at least all of the foregoing reasons and the additional reasons set forth in the responses to the previous Office Actions, also ROSENBERG in view of SONDHE and MOTSINGER fails to render obvious the subject matter of any of the claims submitted herewith.

### CONCLUSION

In view of the foregoing, it is believed that all of the claims in this application are in condition for allowance, which action is respectfully requested. If any issues yet remain which can be resolved by a telephone conference, the Examiner is respectfully invited to contact the undersigned at the telephone number below.

Respectfully submitted,  
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/Heribert F. Muensterer/

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